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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,436	04/05/2004	James Shepherd	P-6721-US	1291

49443 7590 03/27/2008
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EXAMINER	
ROBERTS, JESSICA M	

ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
03/27/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/817,436	**Applicant(s)** SHEPHERD ET AL.	
	Examiner JESSICA ROBERTS	**Art Unit** 2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 December 2007_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-12_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-12_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Acknowledgment of Amendments

The amendment filed on 12/17/2007 overcomes the following rejection(s)/object(s):

The rejection of claim 10 for having minor informalities has been withdrawn in view of Applicants amendment.

Response to Arguments

Applicants arguments filed 12/17/2007 have been fully considered but they are not persuasive.

With respect to Applicants argument regarding Wu does not disclose the step of "generating from said second field a synthetic field" where a cut occurs otherwise than at a frame boundary and "replacing said first field by said second field".

The examiner respectfully disagrees.

Wu discloses detecting when a scene change has occurred, a P frame is changed into an I frame, (col. 9 line 21-25, col. 10 line 1-5, and line 19-22). Since Wu discloses for a scene change, to change the P frame to an I frame, it is clear to the examiner that substituting the I frame for the P frame reads on the claimed limitation. Further disclosed by Wu is that a repeat_first_field flag to signal, when set to one, that the current frame belongs to a film and contains a redundant first field such that the frame is composed by three input fields (col. 11 line 44-50). Since Wu discloses changing a P frame to an I frame, and the frame is composed of three input fields, it is clear to the examiner that Wu is fully capable of changing either of the input fields to an I frame,

which reads upon the claimed limitation. Wu discloses detecting scene changes between successive fields (abstract). Further disclosed is where the scene change is used generally herein to encompass events including a normal scene change (at a frame boundary) a scene change at a field boundary of the same frame, a bad edit or flash, or any other sudden change in a sequence of video images (col. 2 line 3-8). Since Wu discloses detecting scene changes between successive fields, and a scene change is to encompass events including a normal scene change (at a frame boundary), it is clear to the examiner that Wu teaches detecting scene changes between fields and a frame boundary, which reads upon the claimed limitation.

With respect to Applicants argument regarding there is no motivation for one of ordinary skill in the art to combine the teachings of Wu with Holland.

The examiner respectfully disagrees.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Wu teaches an efficient video compression scheme that detects change between successive fields, including flashes, or bad fields. Holland teaches to provide a method and system to correct a disrupted two/three-field video sequence. The relationship among Wu and

Holland is that Wu teaches to detect scene changes associated with bad edits, and Holland teaches to correct a disrupted two/three field-video sequence. Further, Holland discloses disrupted video is when the video is edited without regard to the video sequence, [0004], which implies bad editing. Therefore, it is clear to the examiner, that the combination of Wu and Holland as a whole improves overall image quality.

With respect to Applicants argument regarding Wu does not show the claimed feature of “means for identifying a video cut occurring other than at a frame boundary”.

The examiner respectfully disagrees.

Wu discloses detecting scene changes between successive fields (abstract). Further disclosed is where the scene change is used generally herein to encompass events including a normal scene change (at a frame boundary) a scene change at a field boundary of the same frame, a bad edit or flash, or any other sudden change in a sequence of video images (col. 2 line 3-8). Since Wu discloses detecting scene changes between successive fields, and a scene change is to encompass events including a normal scene change (at a frame boundary), it is clear to the examiner that Wu teaches detecting scene changes between fields and a frame boundary, which reads upon the claimed limitation.

With respect to the Applicants argument regarding neither Wu nor Holland teaches or suggests the step of automatic retiming of the cut to occur at a frame boundary.

The examiner respectfully disagrees.

Wu discloses the use of a scene change flag provided to a delay function and motion estimation stage. Wu teaches the main objective of scene change is to change processing is to change the location of the scheduled new GOP to align with the start of the new scene if a scene change is detected at the proximity of the originally schedule I frame (col. 4 line 26-34). It is clear to the examiner since the delay function accounts for the delay in the processing corresponding frame, and aligns the GOP to start with the new scene, the method and system as disclosed by Wu would be fully capable of automatically retiming of the cut. Further, Holland discloses the field sequence generator generates field sequence reorganization information, which can be applied to the disrupted or duplicated disrupted video signal to generate an undisrupted video signal. The combination of the reorganization information and the field sequence generator enable the field sequence to delete, repeat and/or swap fields within discontinuous 2-3 field sequence ([0027]). Further, the field sequence generator performs the reorganization by associating a relative delay function that accounts for the delays in processing the corresponding frames in delay function and motion estimation; then the above combination would be capable reorganizing the fields so that the retiming occurs at the frame boundary.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Wu et al., US 6,731,684.

Regarding claim 1, Wu teaches a video process comprising the steps of receiving an interlaced sequence of input fields organized in a plurality of frames (GOP); identifying a cut between first and second input fields (Wu; col. 1 line 67 to col. 2 line 1 and abstract; detects scene changes between successive fields); identifying whether the cut occurs at a frame boundary and (normal scene change; column 2 line 5), where a cut occurs otherwise than at a frame boundary (scene change at field boundary of same frame; column 2 line 6-8), generating from said second field a synthetic field and replacing said first field by said synthetic field (Wu discloses when a scene change has occurred, a P frame is converted into an I frame; 9 line 21-25), the process thereby outputting a interlaced sequence of output fields in which the out is positioned at a frame boundary (The main objective of scene change processing is to change the location of the scheduled a new GOP to align with the start of the new scene if a scene change is detected at the proximity of the originally scheduled I frame; column 4 line 26-34. By changing the location of the new GOP so that it aligns with the start of a new scene, the cut would inherently be located at the frame boundary), the sequence of output fields containing the same number of fields as the sequence of input fields (Wu

discloses in multiple scene change detection scenarios where the input fields of the frames are equal to the number of frames to be encoded; see tables A-D).

Regarding claim 2, Wu teaches the second field appears after the first field in the temporal sequence (Wu discloses four possible scene change scenarios where the first field is followed by the second field; column 8 lines 40-56 and tables A-D. Further, as disclosed by Wu is that the scene change detection is done between successive fields, which would be temporally sequenced).

Regarding claim 3, Wu teaches wherein the step of generating a synthetic field from said second field (Wu discloses when a scene change has occurred, a P frame is converted into an I frame; 9 line 21-25), comprises a step of motion compensation such that objects represented in said second field are positioned in said synthetic field at the locations they are estimated to occupy at the time associated with said first field (Wu teaches the use of motion estimation which would include information describing where each section of the picture came from by use of motion vectors; column 4 line 15-16).

Regarding claim 4, Wu teaches wherein the step of generating a synthetic field from said second field (Wu discloses when a scene change has occurred, a P frame is converted into an I frame; column 9 line 21-25), comprises a step of interpolation such that objects represented in said second field are positioned in said synthetic field with the vertical positioning associated with said first field (It would be necessary to include steps of interpolation in-order to convert a frame to an I frame. Furthermore, with interlace frames and fields, vertical positioning is associated with the first field being odd

and second being even, thus not having an offset with the fields; which would equate to the first field being vertical).

Further regarding claim 9, Wu teaches A video process comprising the steps of receiving a sequence of input fields organized in a plurality of frames (GOP); identifying a cut between first and second input fields (detects scene changes between successive fields, column 1 line 67 and column 2 line 1, see abstract); identifying whether the cut occurs at a frame boundary (normal scene change; column 2 line 5) and, where a cut occurs otherwise than at a frame boundary (scene change at field boundary of same frame; column 2 line 6-8), retiming the cut (Wu discloses a delay function that accounts for the delays in processing the corresponding frame in the delay function and motion estimation; column 4 line 43-49. Since the delay accounts for delays in processing, it would be capable of re-adjusting or retiming a scene change), the process thereby outputting a interlaced sequence of output fields in which each cut is positioned at a frame boundary (The main objective of scene change processing is to change the location of the scheduled a new GOP to align with the start of the new scene if a scene change is detected at the proximity of the originally scheduled I frame; column 4 line 26-34.),the sequence of output fields containing the same number of fields as the sequence of input fields (Wu discloses multiple scene change detection scenarios where the input frames are equal to the frames to be encoded; see Tables A-D. Since the number of input frames equals the number of frames to be encoded with their perspective frame type, i.e., I, B, P frames, and since a frame is composed of two fields,

thus disclosed by Wu the number of input fields would be equal to the number of output frames).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 5-8, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al., US-6,731,684 in view of Holland et al., US-2003/0193614 A1.

Regarding claim 5, Wu discloses a video processing apparatus comprising a video input adapted to receive an interlaced sequence of input pictures organized in a plurality of frames (GOP); a control input adapted to receive video cut information: means for identifying a video cut (MCC; the scene change detection functions may be implemented by having the MCC read the scene change measure from the video

compressors to detect a scene change; column 5 line 28-32) occurring otherwise than at a frame boundary and processing means for outputting an interlaced sequence of output pictures organized in a plurality of frames with each cut occurring otherwise than at a frame boundary (Wu discloses where the use of scene change metrics detects the scene changes in both normal scene changes and scene changes that occur at a field boundary in the same frame; column 3 line 28-30. Scene change metrics sc1 and sc2 represent scene change metric for fields 1 and 2. The scene change metrics are implemented in the MCC which controls the scene change function; column 5 lines 44-49 and fig. 4. Further disclosed the invention accommodates both interlace scan and progressive scan frames; column 6 line 14-15) in the input sequence being automatically retimed to occur at a frame boundary in the output sequence (The main objective of scene change processing is to change the location of the scheduled a new GOP to align with the start of the new scene if a scene change is detected at the proximity of the originally scheduled I frame; column 4 line 26-34), the sequence of output fields containing the same number of fields as the sequence of input fields (Wu discloses multiple scene change detection scenarios where the input frames are equal to the frames to be encoded; see Tables A-D. Since the number of input frames equals the number of frames to be encoded with their perspective frame type, i.e., I, B, P frames, and since a frame is composed of two fields, thus disclosed by Wu the number of input fields would be equal to the number of output frames). However, Wu fails to teach the input sequence being automatically retimed to occur at a frame boundary in the output sequence. Holland discloses the field sequence generator generates field

sequence reorganization information, which can be applied to the disrupted or duplicated disrupted video signal to generate an undisrupted video signal. The combination of the reorganization information and the field sequence generator enable the field sequence generator to deletes, repeat and/or swap fields within discontinuous 2-3 field sequence (Holland; Paragraph [0027]). Further, the field sequence generator performs the reorganization by associating a relative delay for the fields of the discontinuous 2 - 3 field sequence (Holland; Paragraph [0028]). The combined reorganization information and the field sequence generator has the functionality of swapping fields, along with the delay function that accounts for the delays in processing the corresponding frames in delay function and motion estimation; then the above combination would be capable of reorganizing the fields so that the retiming occurs at the frame boundary.

Therefore, it would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the method of Wu with the Holland field sequence generator in order to provide an efficient method and system to correct a disrupted two/three video sequence.

Regarding claim 6 the combination of Wu and Holland as a whole further teach automatic retiming operates to bring a cut forward in time such that any motion discontinuity occurs after the cut in the output sequence (Wu discloses where a scene change is detected in a field, the P frame is converted to an I frame. Converting the P frame to the I frame when a scene change is detected would force the scene change forward. Further disclosed by Wu is that for an MPEG film mode frame that is

determined to be a scene change frame, the MPEG-recommended frame based DCT and prediction encoding is deactivated when a scene change may have occurred on a field boundary; column 13 lines 10-15. Holland discloses the field sequence generator generates field sequence reorganization information, which can be applied to the disrupted or duplicated disrupted video signal to generate undisrupted video signal The combination of the reorganization information and the field sequence generator enable the field sequence generator to deletes, repeat and/or swap fields within discontinuous 2-3 field sequence (Holland; Paragraph [0027]). Field sequence generator would also be capable of bringing a cut forward. Holland also discloses where the field sequence generator performs the reorganization by associating a relative delay for certain of the fields of the discontinuous 2-3 field sequence, and the delay information is used to generate a delay sequence for each of the fields (Holland; Paragraph [0028]). The combination of the reorganization information and the delays for each field along with the conversion from an I frame to a P frame when a scene change is detected, would be capable of bringing a cut forward when in time and motion discontinuity occurs after the cut in the output sequence).

Regarding claim 7,the combination of Wu and Holland as a whole further teaches wherein said retiming comprises the step of generating a synthetic field through motion compensation (Wu teaches a delay function **230** that accounts for the delays in processing the corresponding frame in the delay function and motion estimation; column 4 line 43-49. Since the delay accounts for delays in processing it would include the capabilities of re-adjusting, or retiming scene change).

Regarding claim 8, the combination of Wu and Holland as a whole further teaches wherein said retiming comprises the step of generating a synthetic field through interpolation (Wu teaches a P/B frame reordering delay that delays the reordering of the video frames; column 4 line 12-14, and a delay that function that accounts for the delays in processing the corresponding frames in the delay function; column 4 line 43-49. Also disclosed is converting a P frame into an I frame; column 9 line 25-29. The main objective of scene change processing is to change the location of the scheduled a new GOP to align with the start of the new scene if a scene change is detected at the proximity of the originally scheduled I frame; column 4 line 26-34. The delay function would include steps of creating a synthetic field, as it accounts for the delays in processing).

Regarding claim 10, see claim 7 above.

Regarding claim 11, see claim 8 above.

Regarding claim 12, Wu discloses a video processing apparatus comprising a video input adapted (preprocessing stage, fig. 1) to receive a sequence of input frames (GOP); a video output adapted to provide a sequence of output fields organized in a plurality of frames (encoding stage, fig. 1); a field predictor adapted to receive a base field and to generate therefrom a synthetic field having a different timing (Wu discloses MPEG-2 encoders use only frame-based prediction and DCT for film mode pictures. This is achieved by setting the flag frame pred_frame_dct=1 in the bit stream syntax. If frame pred_frame_dct=0, either field –or frame prediction and DCT can be used on a macroblock –by-macroblock basis for the picture; column 2 line 37-46 and column 11

line 38-44. Wu also discloses converting a P frame into an I frame if a scene change is detected at the current frame; column 7 line 65-68 to column 8 lines 1-4. Converting the P frame into the I frame is a synthetic frame, which is composed of two fields. Wu also discloses the use of delay function that accounts for the delay in processing the corresponding frame in the re-ordering delay function and the motion estimation stage; column 4 line 43-47. Since the delay function accounts for delays in processing, it would also be capable of generating a different timing for the synthetic field); a video cut detector (scene change metrics, Wu discloses where the use of scene change metrics detects the scene changes in both normal scene changes and scene changes that occur at a field boundary in the same frame; column 28-30. Scene change metrics sc1 and sc2 represent scene change metric for fields 1 and 2. The scene change metrics are implemented in the MCC, which controls the scene change function; column 5 lines 44-49 and fig. 4.), and a field substitution element controlled through said field sequence detector (Wu disclose the conversion of an P frame to an I frame) and said video cut detector (scene change metrics, sc1 and sc2 represent scene change metric for fields 1 and 2. The scene change metrics are implemented in the MCC which controls the scene change function; column 5 lines 44-49 and fig. 4) to substitute a synthetic field at a cut occurring otherwise than at a frame boundary (scene change at a field boundary of the same frame; column 2 line 3-5. Further disclosed by Wu is the resetting of the picture type based on scene change detection for a frame sequence, and the P frame is converted to an I frame, column 10 line 1-5 and table B), thereby to retime the cut to occur at a frame boundary in the output sequence. (Wu discloses the

use of scene change flag provided to a delay to account for the delays in processing the corresponding frame in the reordering delay function and motion estimation stage. The main objective of scene change processing is to change the location of the scheduled a new GOP to align with the start of the new scene if a scene change is detected at the proximity of the originally scheduled I frame; column 4 line 26-34. Since the delay function accounts for the delay in the processing corresponding frame, it would have the capabilities to retime the cut at a frame boundary).

Wu is silent in regards to a field sequence detector. However Holland discloses the use of a field sequence detector (fig. 1 and see abstract).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to combine the method and apparatus of Wu with the technology of Holland to provide an efficient method and system to correct a disrupted two/three video sequence.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jessica Roberts/
Examiner, Art Unit 2621

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